

Appendix L3

**Extract from Metric Fisheries Survey
of Sruwaddacon Bay (CFB, 2006)**

Extract from data shown on the Central Fisheries Board Website:

http://www.cfb.ie/fisheries_research/estuaries/sruwaddaconbay.htm

METRIC Fisheries Survey of Sruwaddacon Bay

Introduction

Estuaries are an interface habitat – where freshwater flows from rivers mix with the tide and salinity of the open sea. As such, they provide a challenging habitat where nothing remains stable for very long. In every period of 24 hours the tidal level rises and falls twice, subjecting extensive areas to inundation and exposure. The mixing of fresh and salt waters leads to major fluctuations in salinity or salt concentration in addition to stirring up bottom sediments and creating elevated turbidity levels. It is this very changing process that gives estuaries their special qualities and makes them very fertile and productive environments for the species of plants and animals inhabiting them.

Estuaries are also known as transitional water bodies, an appropriate name that identifies the transitional or changeable nature that is the true character of an estuary. Throughout history estuaries have provided a gateway to the interior for coastal explorers travelling by boat or ship. Cities and towns in Ireland have developed in the upper reaches of many such transitional waters, such as Waterford city, Limerick and Drogheda. The growth of such cities and towns has seen an associated development in industry and in facilities to handle boat traffic. In many parts of the world estuaries have come under severe ecological stress due to high density of population, industrialisation and shipping, reclamation of saltmarshes, water abstraction and discharge of waste water.

Estuaries have also been exploited by fish over a long evolutionary period. Many species avail of the highly productive nature of many estuaries for all or part of their life cycle. Other fish are migratory, travelling through estuaries from the sea to reach spawning grounds in freshwater, such as salmon and lamprey, while others, such as eel, migrate down estuaries as adults to spawn at sea.



Hauling in a beach seine



Sorting the catch from a beach seine

Recent fish sampling in Irish estuarine waters was focussed on the anadromous lamprey and shad listed in Annex II of the Habitats Directive and on juvenile bass. In the course of these surveys, inventories of non-target species have been compiled. Such information is relevant to monitoring for the EU Water Framework Directive (WFD). This directive is an EU-wide measure designed to improve water quality in member states and includes all waters – fresh, coastal and transitional (or estuarine). The directive uses a series of quality elements, not simply water chemistry data, in assessing 'quality'. Within the Transitional Waters or estuaries, the quality elements include phytoplankton, benthic invertebrates and fish. In the case of fish, information must be compiled on the species composition and abundance.

CFB/RFB Estuarine Sampling

In the period 2000 – 2006 the Central Fisheries Board, working with the seven Regional Fisheries Boards, initiated a national programme dedicated to the compilation of a baseline on fish species composition and abundance. This initiative has involved the Research, Angling and Conservation & Protection Units within CFB, working closely with each local RFB.

METRIC Project

In 2006, CFB undertook an additional series of fish investigations in transitional Waters in an EPA-funded study. This study, the METRIC project, was undertaken by CFB in conjunction with the Marine Institute. The study was designed to develop protocols and metrics for implementing Water Framework Directive in Irish Coastal and Transitional Waters. Colleagues from the Marine Institute undertook studies on phytoplankton and higher plants and on benthic invertebrates. CFB undertook the fish studies.

Sruwaddacon Bay

Sruwaddacon Bay is located in County Mayo on the northwest coast of Ireland. The estuary is approximately 8.4km² and consists of a northwesterly-orientated main channel fed by the Glenamoy and Muingnabo rivers. A second channel flows around the town of Rossport from the northwest and is fed by the Gweedaney stream. Both channels join into a fast-flowing channel which widens out into an exposed bay at the mouth. Most of the estuary is marine-dominated with little depth in the upper and middle sections at low water and a significant intertidal area. The estuary has few anthropogenic impacts with a mostly agricultural catchment and the small town of Rossport located at the centre of the two main channels.



A mid estuary beach seine site of cobble and Fucus

There are plans to run a gas pipeline across the outer part of the estuary with a processing plant located further inland. The outer area of the estuary is predominantly sand, the mid estuary has mostly hard substrates of cobble and rock while the upper estuary has a mixture of sand and mud substrates. There are patchy areas of *Fucus* cover in the mid and lower estuary but the majority of the estuary is unvegetated. There was an abundance of weed found in beam trawl samples in the outer estuary. Salinity values recorded at beach seine sites were high in the middle and lower estuary (generally around 30ppt). Salinity values close to freshwater were found at the confluence of the Glenamoy and Muingnabo rivers.

Sruwaddacon Bay was surveyed in October 2006 in conjunction with staff of the North Western Regional Fisheries Board. All three sampling methods were used. A total of six beach seine sites were selected



encompassing the majority of geographical and, where possible, habitat range of the estuary. Sand goby was widespread throughout the estuary, encountered at five of the six sites. Highest abundances were at the uppermost sites, as was the case with juvenile flounder. Sprat was found associated with the *Fucus* area of the mid estuary. Abundances in beach seines were the lowest of any estuary surveyed by the CFB in the period 2001-2005.

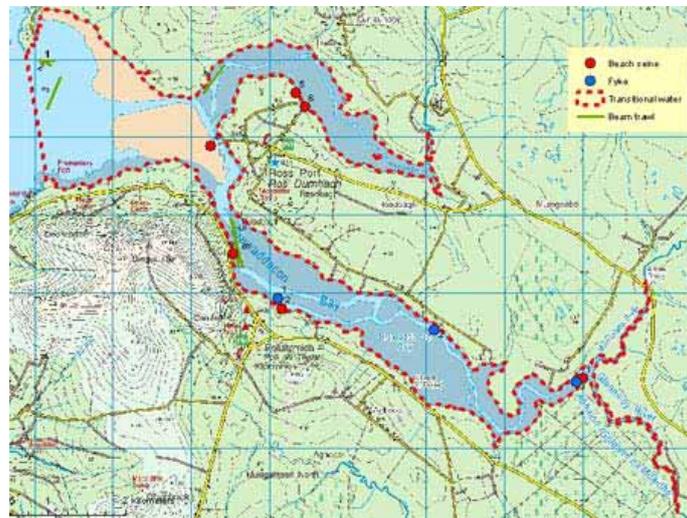
A lower estuary sandy beach seine site in Sruwaddacon Bay



A mid estuary site at high water in Srwaddacon Bay

Fyke nets were placed in the middle and upper sections of the estuary. Due to the exposed nature of the lower estuary it was deemed unsuitable for fyke netting. Flounder were found at all three fyke net sites and were more abundant in the upper estuary. Five bearded rockling was found at both mid-estuary sites. Eel was found in low abundance in the estuary. Trout were sampled at the upper freshwater site. Fyke net species composition was similar to that of Tullaghan Bay, located close by and surveyed in the same week.

Due to a lack of depth throughout the estuary beam trawling was confined to the lower and mid-estuary at high water. Trawls were characterised by a low Catch Per Unit Effort (CPUE) and the lowest diversity of any trawl samples taken under the METRIC project. Pipefish were present in low numbers in five of the six trawls and were associated with the large amount of weed found in the trawls.



Location of sampling sites in Srwaddacon Bay



Salinity values by category taken at beach seine sites in Sruwaddacon Bay

The exposed bare sand and hard substrate habitats of the lower and mid estuary are characterised by low diversity and low abundance of fish communities. This appears to be a natural feature of estuaries in the region. The fish assemblages were similar to those in Tullaghan both have a similar habitat. Fast currents and a lack of depth at low water provide difficult conditions for small fish to thrive. Fish species such as pipefish may be able to tolerate the strong currents in the lower and mid estuary by clinging onto the weed.

Table 1. Species lists for beam trawls from Sruwaddacon Bay

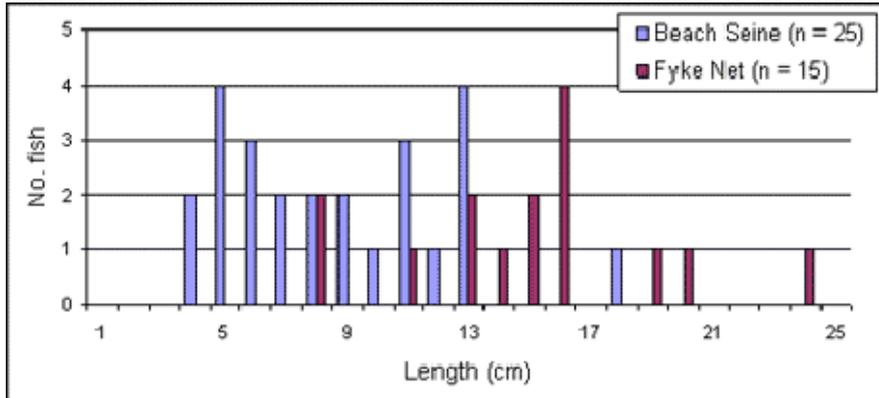
Species	Common name
<i>Ammodytes tobianus</i>	Lesser sandeel
<i>Crenilabrus melops</i>	Corkwing wrasse
<i>Entelurus aequoreus</i>	Snake pipefish
<i>Gaidropsarus vulgaris</i>	Three-bearded rockling
<i>Gobiusculus flavescens</i>	2-spot goby
<i>Labrus bergylta</i>	Ballan wrasse
<i>Labrus bimaculatus</i>	Cuckoo wrasse
<i>Liparis liparis</i>	Sea snail
<i>Myoxocephalus scorpius</i>	Short-spined seascorpion
<i>Pleuronectes platessa</i>	Plaice
<i>Pomatoschistus minutus</i>	Sand goby
<i>Spinachia spinachia</i>	15-spined stickleback
<i>Syngnathus rostellatus</i>	Nilssons pipefish

Table 2. Species lists for beach seines from Sruwaddacon Bay

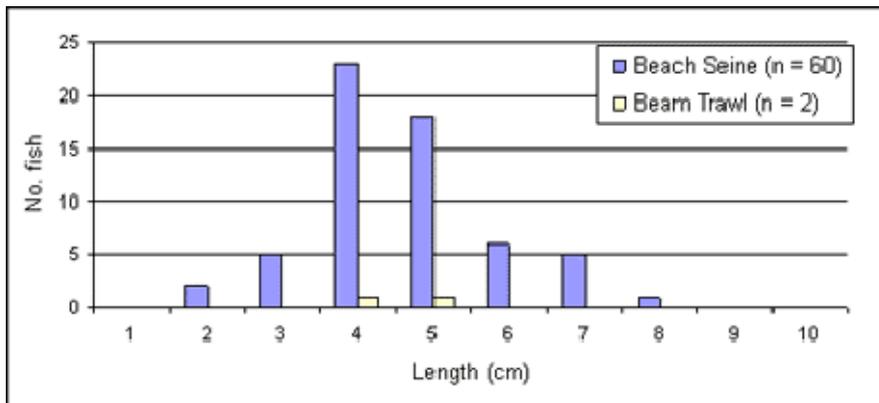
Species	Common name
<i>Atherina presbyter</i>	Sand smelt
<i>Crenilabrus melops</i>	Corkwing wrasse
<i>Myoxocephalus scorpius</i>	Short-spined seascorpion
<i>Platichthys flesus</i>	Flounder
<i>Pleuronectes platessa</i>	Plaice
<i>Pomatoschistus minutus</i>	Sand goby
<i>Salmo trutta</i>	Brown trout
<i>Sprattus sprattus</i>	Sprat
Mugilidae	Grey mullets

Table 3. Species lists for Fyke nets from Sruwaddacon Bay Bay

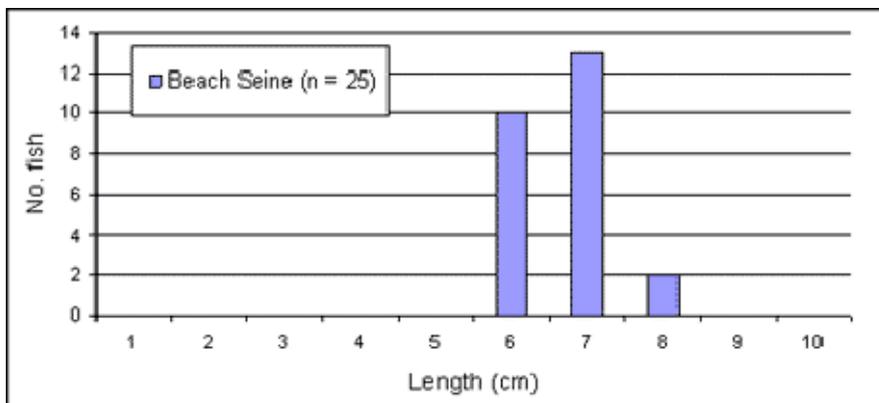
Species	Common name
<i>Anguilla anguilla</i>	Eel
<i>Ciliata mustela</i>	5-bearded rockling
<i>Dicentrarchus labrax</i>	Seabass
<i>Platichthys flesus</i>	Flounder
<i>Pollachius pollachius</i>	Pollack
<i>Salmo trutta</i>	Brown trout



Flounder length frequency from Sruwaddacon Bay



Goby length frequency from Sruwaddacon Bay



Goby (excluding black goby) length frequency from Sruwaddacon Bay